der for the state of the state

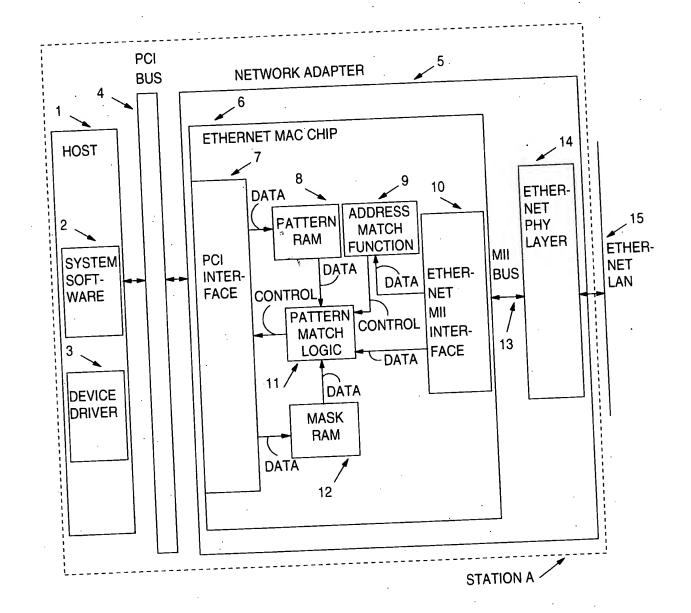


FIG. 1

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DA SA LENGTH/ DATA PADDING (IF NEEDED) CR	RC
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DA - DESTINATION ADDRESS (6 BYTES)

SA - SOURCE ADDRESS (6 BYTES)

LENGTH/TYPE - LENGTH OF DATA FIELD (IEEE 802.3)/TYPE DEFINITION (ETHERNET) (2 BYTES)

DATA - LLC DATA (INCLUDING PADDING, IF NEEDED, IN SHORT LLC FRAMES) (46 TO 1500 BYTES)

CRC - CYCLE REDUNDANCY CHECK (4 BYTES)

ETHERNET FRAME FORMAT

FIG. 2

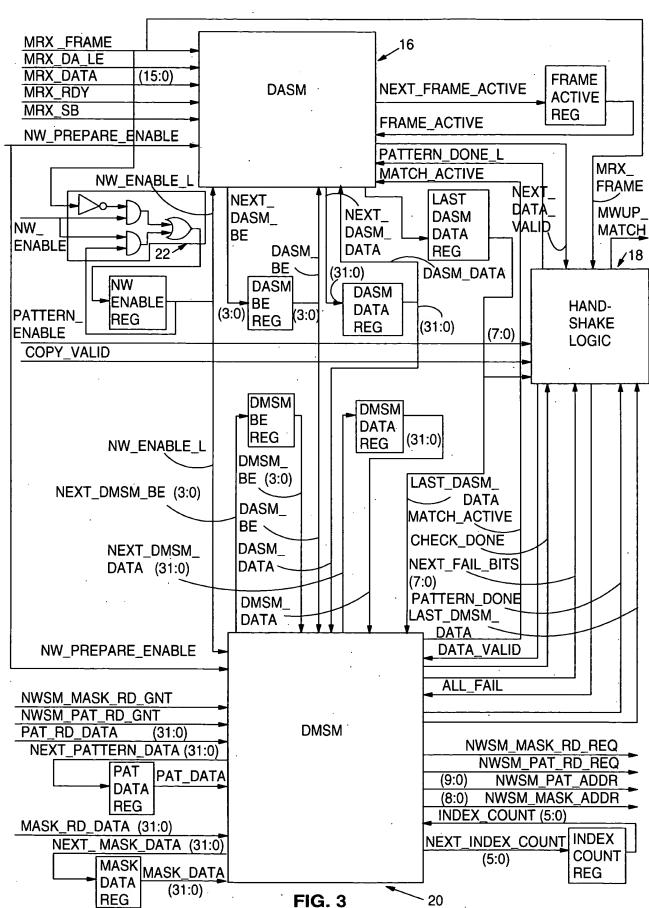
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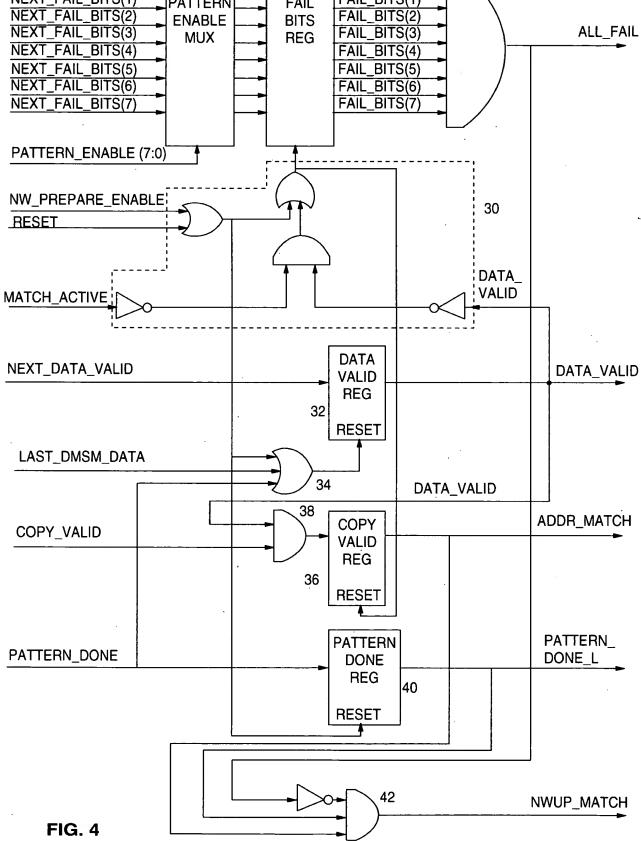
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APPROVED O.G. FIG.

CLASS SUBCLASS



APPROVED O.G. FIG. CLASS SUBCLASS BY RA9-98-007 ALLISON ET AL DRAFTSMAN 4/13 26 24 28 NEXT_FAIL_BITS(0) FAIL_BITS(0) NEXT_FAIL_BITS(1) FAIL_BITS(1) PATTERN **FAIL** NEXT_FAIL_BITS(2) FAIL_BITS(2) **ENABLE BITS** NEXT_FAIL_BITS(3) ALL FAIL FAIL_BITS(3) MUX REG NEXT_FAIL_BITS(4) FAIL_BITS(4) NEXT_FAIL_BITS(5) FAIL_BITS(5) NEXT_FAIL_BITS(6) FAIL_BITS(6) FAIL_BITS(7) NEXT_FAIL_BITS(7) PATTERN_ENABLE (7:0) NW_PREPARE_ENABLE 30 RESET DATA **VALID** MATCH_ACTIVE; DATA NEXT_DATA_VALID DATA_VALID **VALID REG** 32 **RESET** LAST_DMSM_DATA 34 DATA_VALID ADDR_MATCH COPY COPY_VALID **VALID**



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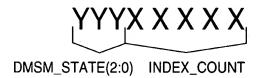


FIG. 5A

FIG. 5B

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STATE 0: IDLE/DATA31:16 IF PREPARE FOR ENABLE IS SET, OR ENABLE	STATE 1: DATA15:0 IF PREPARE FOR ENABLE IS SET, OR ENABLE IS TURNED OFF
IS TURNED OFF TURN OFF DATA_VALID AND FRAME_ACTIVE AND STAY IN STATE 0	TURN OFF DATA_VALID AND FRAME_ACTIVE AND GO TO STATE 0
IF FRAME FROM MEDIA ENDS (MRX_FRAME IS DEASSERTED) AND FRAME_ACTIVE FLAG	IF FRAME FROM MEDIA ENDS (MRX_FRAME IS DEASSERTED) AND FRAME_ACTIVE FLAG IS SET
TURN OFF FRAME_ACTIVE FLAG, MARK DATA AS LAST DATA TRANSFER TO DMSM (TURN ON LAST_DASM_DATA), AND STAY IN STATE 0	TURN OFF FRAME_ACTIVE FLAG, MARK DATA
IF FRAME IS BEING RECEIVED (MRX_FRAME IS ASSERTED), AND FRAME_ACTIVE IS NOT SET (THIS MEANS THE FRAME IS JUST STARTING) AND DESTINATION ADDRESS LATCH ENABLE IS SET (MRX_DA_LE IS ASSERTED), AND MRX_RDY IS SET (I.E. 16 BITS OF DATA IS BEING TRANSFERRED FROM THE MEDIA) AN MATCH_ACTIVE = 0 (DMSM IS NOT CURRENTLY FINISHING MATCHING ON A PREVIOUS FRAME), AND MRX_SB IS NOT ASSERTED (I.E. IT'S A FULL 2 BYTE TRANSFER) SAVE DATA FROM MRX_DATA IN DASM_DATA(31:16), SET FRAME_ACTIVE SIGNAL TO SHOW WE'RE RECEIVING A	,
FRAME. SET DASM_BE (VALID BYTES BYTE	
IF FRAME IS BEING RECEIVED (MRX_FRAM ASSERTED), AND FRAME_ACTIVE IS NOT S (THIS MEANS THE FRAME IS JUST STARTIN AND DESTINATION ADDRESS LATCH ENAB IS SET (MRX_DA_LE IS ASSERTED), AND MRX_RDY IS SET (I.E. 16 BITS OF DATA IS BEING TRANSFERRED FROM THE MEDIA). MATCH_ACTIVE = 0 (DMSM IS NOT CURRE FINISHING MATCHING ON A PREVIOUS FRAME), AND MRX_SB IS ASSERTED (I.E. 1 BYTE TRANSFER, WHICH CAN ONLY HAI AT THE END OF A FRAME)	AND IF FRAME IS BEING RECEIVED AND INTLY FRAME_ACTIVE IS SET AND MRX_RDY IS ASSERTED (16 BITS OF DATA IS BEING TRANSFERRED FROM THE MEDIA) AND TRANSFERRED FROM THE MEDIA) AND

FIG. 6A FIG. 6B

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STATE 0: IDLE/DATA31:16 STATE 1: DATA15:0 SAVE DATA FROM MRX DATA IN DASM_DATA(31:16), SET FRAME_ACTIVE SIGNAL TO SHOW WE'RE RECEIVING A FRAME. SET DASM_BE (VALID BYTES BIT MASK) TO "1000", SET DATA VALID TO TELL SAVE DATA FROM MRX DATA IN DMSM TO PROCESS THE DATA IN DASM_DATA(15:0), SET DASM_BE TO "1111", DASM_DATA, AND STAY IN STATE 0, AS THIS SET DATA_VALID TO TELL DMSM TO WAS LAST DATA TRANSFER FOR THE FRAME PROCESS THE DATA IN DASM_DATA, AND GO TO STATE 0 IF PATTERN_DONE IS SET (I.E. DMSM HAS FINISHED CHECKING ALL PATTERNS) IF FRAME IS BEING RECEIVED AND STAY IN STATE 0 FRAME ACTIVE IS SET AND MRX RDY IS ASSERTED (16 BITS OF DATA IS BEING IF FRAME IS BEING RECEIVED AND TRANSFERRED FROM THE MEDIA) AND FRAME_ACTIVE IS SET AND MRX_RDY IS MRX SB IS ASSERTED (I.E. IT'S A 1 BYTE ASSERTED (16 BITS OF DATA IS BEING TRANSFER, AND LAST TRANSFER OF FRAME) TRANSFERRED FROM THE MEDIA) AND MRX_SB IS NOT ASSERTRD (I.E. IT'S A FULL 2 SAVE DATA FROM MRX DATA IN BYTE TRANSFER) DASM DATA(15:0), SET DASM BE TO "1110", SET DATA VALID TO TELL DMSM TO SAVE DATA FROM MRX_DATA IN PROCESS THE DATA IN DASM_DATA, AND DASM_DATA(31:16), SET DASM_BE TO GO TO STATE 0 "1100", AND GO TO STATE 1 IF FRAME IS BEING RECEIVED AND FRAME_ACTIVE IS SET AND MRX_RDY IS ASSERTED (16 BITS OF DATA IS BEING TRANSFERRED FROM THE MEDIA) AND MRX_SB IS ASSERTED (I.E. IT'S A 1 BYTE TRANSFER, AND LAST TRANSFER OF FRAME) **ELSE** SAVE DATA FROM MRX DATA IN DASM_DATA(31:16), SET DASM_BE TO "1000", STAY IN STATE 1 SET DATA VALID TO TELL DMSM TO PROCESS THE DATA IN DASM_DATA, AND STAY IN STATE 0 **ELSE** STAY IN STATE 0 FIG. 6B FIG. 6A

FIG. 6B

For the states of the second states and the states of the second states and the states of the states

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STATE (): IDI E	STATES 1 2 3 4 5 6 7. PATTERNS 1.7	STATE 8: PATTEBN 8
IF PREPARE FOR ENABLE IS SET OR ENABLE IS TURNED OFF	IF PREPARE FOR ENABLE IS SET OR ENABLE IS TURNED OFF	IF PREPARE FOR ENABLE IS SET OR ENABLE IS TURNED OFF
STAY IN STATE 0	STAY IN STATE 0	STAY IN STATE 0
IF DATA FROM DMSM IS VALID (I.E. DATA_VALID IS ASSERTED) AND ALL PATTERNS HAVE NOT FAILED (I.E. ALL_FAIL IS NOT ASSERTED)	ALWAYS: SEND MASK BITS FOR THE PATTERN BEING MATCHED TO LOGIC THAT IS DOING THE MATCHING I.E. WHILE IN STATE 1, SEND MASK BITS 3:0 TO MASK LOGIC; WHILE IN STATE 2, SEND MASK BITS 7:4; WHILE IN STATE 3, SEND MASK BITS 11:8. ETC.	ALWAYS: SEND MASK BITS FOR PATTERN 8 (MASK BITS 31:28) TO THE LOGIC THAT IS DOING THE MATCHING
SET READ REQUESTS TO RAMS TO READ MASK AND PATTERN DATA. SET PATTERN ADDRESS TO "STATE & 00000" AND SET MASK ADDRESS TO INDEX COUNT. TRANSFER DATA FROM	IF ALL PATTERNS HAVE FAILED (ALL_FAIL IS ASSERTED)	IF ALL PATTERNS HAVE FAILED (ALL_FAIL IS ASSERTED)
PASM_DATA REGISTER TO DWSM_DATA REGISTER. TRANSFER DATA VALID BITS FROM DASM_BE TO DMSM_BE. GO TO STATE 1 TO COMPARE PATTERN DATA AND MASK BITS FOR PATTERN 1.	TURN ON PATTERN_DONE FLAG TO TELL DASM THAT ALL MATCHING ACTIVITY IS COMPLETE FOR THIS FRAME, AND GO TO STATE 0.	TURN ON PATTERN_DONE FLAG TO TELL DASM THAT ALL MATCHING ACTIVITY IS COMPLETE FOR THIS FRAME, AND GO TO STATE 0.
ELSE	IF ALL PATTERNS HAVE NOT FAILED (ALL_FAIL IS NOT ASSERTED), THEN IF DATA_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND THE CURRENT PATTERN'S DATA WORD DOES NOT MATCH THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM DATA) FOR RITS THAT ARE SET	IF ALL PATTERNS HAVE NOT FAILED (ALL_FAIL IS NOT ASSERTED) THEN IF DATA_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND PATTERN 8'S DATA WORD DOES NOT MATCH THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM DATA) FOR RITS THAT ARE SET IN THE
STAY IN STATE 0 FIG. 7A FIG. 7B	IN THE MASK FOR THIS PATTERN (I.E. THIS PATTERN HAS FAILED MATCHING)	MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED MATCHING) AND INDEX COUNT IS LESS THAN 32 (WE'VE NOT CHECKED ALL 128 BYTES OF THE PATTERN 'YET)
FIG. 7A FIG. 7D	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1

FAIL

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STATE 0: IDLE

													-
STATE 8: PATTERN 8	SET FAIL BIT FOR PATTERN 8 (FAIL BIT 7) READ	PATTERN DATA FOR PATTERN 1 (ADDRESS IS	STATE (2:0) & UPDATED INDEX COUNT), READ	NEXT MASK WORD (ADDRESS IS UPDATED	INDEX COUNT), TRANSFER DATA FROM	DASM_DATA REGISTER TO DMSM_DATA	REGISTER. TRANSFER DATA VALID BITS FROM	DASM_BE TO DMSM_BE. GO TO STATE 1 TO	START CHECK OF ALL 8 PATTERNS ON THIS	NEW WORD OF DATA FROM DASM. IF THIS IS	LAST TRANSFER OF A FRAME (FRAME HAS	ENDED BEFORE ALL 128 BYTES HAVE BEEN	
STATES 1, 2, 3, 4, 5, 6, 7: PATTERNS 1-7		SET THE FAIL BIT FOR THE PATTERN NUMBER	BEING CHECKED (STATE NUMBER - 1) READ	THE PATTERN DATA FOR THE NEXT PATTERN	(ADDRESS IS STATE (2:0) AND INDEX COUNT)	AND ASSERT MATCH ACTIVE FLAG TO TELL	DASM THAT MATCHING IS ACTIVE, AND TO GO	TO NEXT SEQUENTIAL STATE (I.E. IF IN STATE 1,	GO TO STATE 2IF IN STATE 7, GO TO STATE	8). NOTE: IF IN STATE 7 INCREMENT INDEX	COUNT BEFORE GOING TO STATE 8, ELSE,	LEAVE IT AS IS.	
													•

S NOT ASSERTED), THEN IF DATA VALID IS SET MATCHING) AND INDEX COUNT IS EQUAL TO 32 IHE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM_DATA) FOR BITS THAT ARE SET IN THE MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED PATTERN 8'S DATA WORD DOES NOT MATCH DMSM HAS VALID DATA FROM DASM), AND F ALL PATTERNS HAVE NOT FAILED (ALI S NOT ASSERTED), THEN IF DATA_VALID IS SET DMSM HAS VALID DATA FROM DASM), AND THE F ALL PATTERNS HAVE NOT FAILED (ALL FAIL THE DATÀ FROM THE MEDIA (I.E. THE DATA IN **CURRENT PATTERN'S DATA WORD MATCHES** DMSM) FOR BITS THAT ARE SET IN THE MASK I.E. THIS PATTERN HAS FAILED MATCHING)

NOTE: IF IN STATE 7, INCREMENT INDEX COUNT BEFORE GOING TO STATE 8, ELSE, LEAVE IT AS GO TO STATE 2...IF IN STATE 7, GO TO STATE 8) PATTERN (ADDRESS IS STATE & INDEX COUNT DASM THAT MATCHING IS ACTIVE, AND GO TO **NEXT SEQUENTIAL STATE (I.E. IF IN STATE 1,** AND ASSERT MATCH, ACTIVE FLAG TO TELL READ THE PATTERN DATA FOR THE NEXT

PATTERN MATCHING IS COMPLETE, AND GO TO PATTERN DONE FLAG TO TELL DASM THAT ALL SET FAIL BIT FOR PATTERN 8 (FAIL BIT 7), SET STATE 0 TO AWAIT DATA FROM NEXT FRAME.

> 7B FIG. 7B FIG. 7C FIG. 7A

FIG. 7D

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TATLERIAS HAVE NOT FAILED (ALL_FAIL T ASSERTED), THEN IF DATA_VALID IS ET (FRAME HAS ENDED BEFORE DMSM HECKED ALL 128 BYTES OF ALL NS), DMSM MUST NOW MAKE SURE ALL BITS ARE TURNED OFF FOR THIS ERN ARE ON HE FAIL BIT FOR THE PATTERN NUMBER CHECKED (STATE NUMBER - 1), AND GO XT SEQUENTIAL STATE. IT IS NO LONGER SSARY TO READ PATTERN DATA FROM ATTERN RAM. NOTE: IF IN STATE 7 MENT INDEX COUNT BEFORE GOING TO IS, ELSE LEAVE IT AS IS.		ES 1, 2, 3, 4, 5, 6, 7: PATTERNS 1-7	STATE 8: PATTERN 8
IE FAIL BIT FOR THE PATTERN NUMBER CHECKED (STATE NUMBER - 1), AND GO (T SEQUENTIAL STATE. IT IS NO LONGER SARY TO READ PATTERN DATA FROM ITTERN RAM. NOTE: IF IN STATE 7 MENT INDEX COUNT BEFORE GOING TO 8, ELSE LEAVE IT AS IS.		IF ALL PATTERNS HAVE NOT FAILED (ALL_FAIL IS NOT ASSERTED), THEN IF DATA_VALID IS NOT SET (FRAME HAS ENDED BEFORE DMSM HAS CHECKED ALL 128 BYTES OF ALL PATERNS), DMSM MUST NOW MAKE SURE ALL MASK BITS ARE TURNED OFF FOR THIS PATTERN ARE ON	IS NOT ASSERTED) THEN IF DATA_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND PATTERN 8'S DATA WORD DOES MATCH THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM_DATA) FOR BITS THAT ARE SET IN THE MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED MATCHING) AND INDEX COUNT IS EQUAL TO 32
SARY TO READ PATTERN DATA FROM ATTERN RAM. NOTE: IF IN STATE 7 MENT INDEX COUNT BEFORE GOING TO 8, ELSE LEAVE IT AS IS.		SET THE FAIL BIT FOR THE PATTERN NUMBER BEING CHECKED (STATE NUMBER - 1), AND GO	
IF ALL PATTERNS HAVE NOT FAILED (ALL_FAIL IS NOT ASSERTED) THEN IF DATA_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND PATTERN 8'S DATA WORD DOES NOT MATCH THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM_DATA) FOR BITS THAT ARE SET IN THE MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED MATCHING) AND INDEX COUNT IS LESS THAN 32 (WE'VE NOT CHECKED ALL 128 BYTES OF THE PATTERN YET)		NECESSARY TO READ PATTERN DATA FROM THE PATTERN BATE 7 INCREMENT INDEX COUNT BEFORE GOING TO STATE 8, ELSE LEAVE IT AS IS.	SET PATTERN DONE FLAG TO TELL DASM THAT ALL PATTERN MATCHING IS COMPLETE, AND GO TO STATE 0 TO AWAIT DATA FROM NEXT FRAME.
IS NOT ASSERTED) THEN IF DATA_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND PATTERN 8'S DATA WORD DOES NOT MATCH THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM_DATA) FOR BITS THAT ARE SET IN THE MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED MATCHING) AND INDEX COUNT IS LESS THAN 32 (WE'VE NOT CHECKED ALL 128 BYTES OF THE PATTERN YET)			IF ALL PATTERNS HAVE NOT FAILED (ALL FAIL
I HE DATA FHOM THE MEDIA (I.E. THE DATA IN DMSM_DATA) FOR BITS THAT ARE SET IN THE MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED MATCHING) AND INDEX COUNT IS LESS THAN 32 (WE'VE NOT CHECKED ALL 128 BYTES OF THE PATTERN YET)	_		DATTERN 8'S DATA WORD DOES NOT MATCH
MATCHING) AND INDEX COUNTIS LESS THAN 32 (WE'VE NOT CHECKED ALL 128 BYTES OF THE PATTERN YET)			THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM_DATA) FOR BITS THAT ARE SET IN THE MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED
			MAI CHING) AND INDEX COUNTIS LESS THAN 32 (WE'VE NOT CHECKED ALL 128 BYTES OF THE PATTERN YET)

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STATE 0: IDLE

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COUNT) READ NEXT MASK WORD (ADDRESS IS SET THE FAIL BIT FOR THE PATTERN 8 IF INDEX COUNT IS LESS THAN 32, READ NEXT WORD OF FROM DASM_DATA REGISTER TO DMSM_DATA REGISTER. TRANSFER DATA VALID BITS FROM PATTERNS), DMSM MUST NOW MAKE SURE ALI TURNED OFF. IF ANY OF THESE BITS ARE ON... NEW WORD OF DATA FROM DASM. IF THIS IS IF ALL PATTERNS HAVE NOT FAILED (ALL, FAII NOT SET (FRAME HAS ENDED BEFORE DMSM IS NOT ASSERTED), THEN IF DATA_VALID IS MASK BITS FOR PATTERN 8 (BITS 31:28) ARE MASK (ADDRESS IS UPDATED INDEX COUNT) UPDATED INDEX COUNT), TRANSFER DATA DASM_BE TO DMSM_BE. GO TO STATE 1 TO START CHECK OF ALL 8 PATTERNS ON THIS ADDRESS IS STATE(2:0) & UPDATED INDEX ENDED BEFORE ALL 128 BYTES HAVE BEEN LAST TRANSFER OF A FRAME (FRAME HAS CHECKED), SET LAST TRANSFER FLAG). PATTERN_DONE AND GO TO STATE 0 READ PATTERN DATA FOR PATTERN IF INDEX COUNT IS EQUAL TO 32. SET HAS CHECKED ALL 128 BYTES OF ALI STATE 8: PATTERN 8 AND GO TO STATE 1 STATES 1, 2, 3, 4, 5, 6, 7: PATTERNS 1-7

FIG. 7A

FIG. 7C FIG. 7B

-1G. 7D

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The selection of the se

PATTERN NUMBER	PATTERN RAM LOCATION (BYTE ADDRESS)	PATTERN RAM LOCATION (WORD ADDRESS)
1	000-07F	000-01F
2	080-0FF	020-03F
3	100-17F	040-05F
4	180-1FF	060-07F
5	200-27F	080-09F
6	280-2FF	0A0-0BF
7	300-37F	0C0-0DF
8	380-3FF	0E0-0FF

FIG. 8

BY CLASS SUBCLASS
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RITS

	3 0	MASK FOR PATTERN 1 WORD I
	7 4	MASK FOR PATTERN 2 WORD I
·	11 8	MASK FOR PATTERN 3 WORD I
	15 12 11	MASK FOR PATTERN 4 WORD I
	19 16	MASK FOR PATTERN 5 WORD I
	23 20	MASK FOR PATTERN 6 WORD I
	27 24 23	MASK FOR PATTERN 7 WORD I
	31 28 27	MASK FOR PATTERN 8 WORD I

FIG. 9